

IN THE CLAIMS:

Please amend claims 24, 31, 32, 38, 40, 41, 47, 49, 50, and 55 as follows:

24. (Amended) A method of fabricating a semiconductor device comprising [the steps of]:

forming an amorphous semiconductor film on an insulating surface;

adding a solution including a catalyst material in contact with said amorphous semiconductor film, said catalyst material being capable of promoting crystallization of said amorphous semiconductor film;

first heating said amorphous semiconductor film to crystallize said amorphous semiconductor film;

irradiating said crystallized semiconductor film with a light to promote further crystallization of said crystallized semiconductor film after said first heating step; and

reducing defects in said crystallized semiconductor film by second heating said crystallized semiconductor film at a temperature not lower than 450°C [in the range of 450-750°C to reduce defects therein] after said irradiating step; and then

annealing said crystallized semiconductor film in a hydrogen containing atmosphere for hydrogenation after said second heating.

31. (Amended) A method according to claim 24 wherein said light [fuses] melts a surface of said semiconductor film in the irradiating step.

32. (Amended) A method of fabricating a semiconductor device comprising [the steps of]:

forming an amorphous semiconductor film on an insulating surface; selectively adding a solution including a catalyst material in contact with a first portion of said amorphous semiconductor film while said solution is not added to a second portion of said amorphous semiconductor film [is not added with said solution], said catalyst material being capable of promoting crystallization of said amorphous semiconductor film;

first heating said amorphous semiconductor film to crystallize said amorphous semiconductor film so that crystal growth proceeds from said first portion to said second portion in a lateral direction with respect to said insulating surface;

irradiating said crystallized semiconductor film with a light to promote further crystallization of said crystallized semiconductor film after said first heating step; and

reducing defects in said crystallized semiconductor film by second heating said crystallized semiconductor film at a temperature not lower than 450°C [in the range of 450-750°C to reduce defects therein] after said irradiating step; and then

annealing said crystallized semiconductor film in a hydrogen containing atmosphere for hydrogenation after said second heating.

38. (Amended) A method according to claim 32 wherein said first portion of [the] said crystallized semiconductor film comprises said catalyst material at a first concentration of 1×10^{16} to 1×10^{19} atoms-cm⁻³ while the

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second portion of [the] said crystallized semiconductor film comprises said catalyst material at a second concentration lower than said first concentration.

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40. (Amended) A method according to claim 32 wherein said light [fuses] melts a surface of said semiconductor film in the irradiating step.

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41. (Amended) A method of fabricating a thin film transistor comprising [the] steps of:

forming an amorphous semiconductor film on an insulating surface; selectively adding a solution including a catalyst material in contact with a first portion of said amorphous semiconductor film while said solution is not added to a second portion of said amorphous semiconductor film [is not added with said solution], said catalyst material being capable of promoting crystallization of said amorphous semiconductor film;

first heating said amorphous semiconductor film to crystallize said amorphous semiconductor film so that crystal growth proceeds from said first portion to said second portion in a lateral direction with respect to said insulating surface;

irradiating said crystallized semiconductor film with a light to promote further crystallization of said crystallized semiconductor film after said first heating step;

reducing defects in said crystallized semiconductor film by second heating said crystallized semiconductor film at a temperature not lower than 450°C [in the range of 450-750°C to reduce defects therein] after said irradiating step; and

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forming a channel forming region in said semiconductor film [of said thin film transistor] using said second portion of the crystallized semiconductor film; and then
annealing said crystallized semiconductor film in a hydrogen containing atmosphere for hydrogenation after said second heating.

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47. (Amended) A method according to claim 41 wherein said first portion of [the] said crystallized semiconductor film comprises said catalyst material at a first concentration of 1×10^{16} to 1×10^{19} atoms-cm⁻³ while the second portion of [the] said crystallized semiconductor film comprises said catalyst material at a second concentration lower than said first concentration.

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49. (Amended) A method according to claim 41 wherein said light [fuses] melts a surface of said semiconductor film in the irradiating step.

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50. (Amended) A method of fabricating a semiconductor device comprising [the] steps of:

forming an amorphous semiconductor film on an insulating surface; introducing a catalyst material in contact with said amorphous semiconductor film, said catalyst material being capable of promoting crystallization of said amorphous semiconductor film;

first heating said amorphous semiconductor film to crystallize said amorphous semiconductor film;

irradiating said crystallized semiconductor film with a light to promote further crystallization of said crystallized semiconductor film after said first heating step; and

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reducing defects in said crystallized semiconductor film by second heating said crystallized semiconductor film at a temperature not lower than 450°C [in the range of 450-750°C to reduce defects therein] after said irradiating step; and then

annealing said crystallized semiconductor film in a hydrogen containing atmosphere for hydrogenation after said second heating.

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55. (Amended) A method according to claim 50 wherein said light [fuses] melts a surface of said semiconductor film in the irradiating step.

Please add new claims 56-58 as follows:

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56. A method of manufacturing a semiconductor device comprising:
forming a semiconductor film comprising amorphous silicon on an insulating surface;
crystallizing said semiconductor film by first heating;
irradiating the crystallized semiconductor film with a pulsed excimer laser light to increase a crystallinity of the semiconductor film after said first heating wherein one portion of said semiconductor film is irradiated with a plurality of shots of said pulsed excimer laser light,
reducing defects of the crystallized semiconductor film by second heating at a temperature not lower than 450°C after the irradiation of said laser light.

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57. A method according to claim 56 wherein said irradiating is performed in a nitrogen atmosphere.